Agricultural Water Use Efficiency Strategy - Objectives and Tools

INTRODUCTION

The CALFED Bay-Delta Program will develop a long-term comprehensive plan to restore ecological health and improve water management for beneficial uses of the Bay-Delta system. Three alternatives to accomplish this mission will be refined and analyzed during Phase II of the Program. These alternatives will share a "common program" of measures to ensure that California's water supplies are used efficiently.

Water use efficiency can be described as striving to obtain the greatest benefit from a unit of water. The nature of water use efficiency and its benefits can vary according to the user's perspective. In the agricultural sector the benefits from improvements in efficiency might differ from the perspective of a field, farm, irrigation district, or basin. If the perspective is broadened to include environmental and water quality benefits as well as water supply benefits, then a different set of measures might be viewed as most efficient. For a program like CALFED, which seeks to improve water supply reliability, protect water quality, and improve ecosystem health, a water use efficiency program that recognizes the linkages among these resource areas may yield the greatest benefits and thus the greatest water use efficiency.

The CALFED agricultural water use efficiency program will be designed to identify diverse opportunities for efficiency improvements and increase the benefits that can be derived from a unit of water. The program will look to water management techniques that increase efficiency at the field, farm, district, and basin level where these are appropriate. In addition, the program will support measures that increase agricultural production from a unit of water, or protect water quality, or increase environmental benefits from water management while meeting agricultural needs.

OBJECTIVES OF WATER USE EFFICIENCY STRATEGY

To achieve the desired results of the common program, the approach to agricultural water use efficiency should meet the objectives stated below:

- **Ensure a strong water use efficiency component in the Bay-Delta solution** - During the CALFED scoping period and at numerous public meetings, the public as well as stakeholders said water use efficiency improvements should play an integral role in the Bay-Delta solution.

- **Build on the progress and achievements of the agricultural MOU (AB 3616)** - The AB 3616 process has resulted in a draft agricultural MOU that emphasizes uniform analysis of efficient water management practices, provides a standardized format for

water management plans, and calls for implementation of measures that meet criteria contained in the MOU. The MOU was developed jointly by agricultural interests and public interest groups. It represents an important step forward in reaching consensus on agricultural water management.

- **Provide adequate assurance that agricultural water supplies will be used efficiently**- A central tenet of the CALFED process is that all interests will move forward together. As we plan for possible improvements in water conveyance and storage, it will be important for stakeholders and taxpayers to be assured that existing water supplies are being used efficiently. The approach we take must provide the information and include the tools to offer this assurance.

- **Emphasize market tools over regulatory tools** - The CALFED approach to agricultural water use efficiency will include both market and regulatory tools to prompt efficient use. Market tools that offer financial benefits to water users are most likely to be accepted and implemented. Regulatory tools will help provide assurance of efficient use even if water users do not respond to market forces.

- **Improve water management to achieve multiple benefits** - This objective reflects the broad mission and multiple objectives of the CALFED program. Typically, water uses related to environmental, agricultural, and urban purposes are viewed independently. However, many opportunities exist to use water for multiple benefits without adversely impacting any of the users. These opportunities include development of conjunctive use programs; changes in timing of releases to correspond with fishery, water quality, and agricultural needs; and changes in water management that correspond with annual hydrologic conditions.

- **Encourage analysis of water use efficiency at all levels, from field to valley-wide** - Water use efficiency measures implemented at different levels may yield different benefits. Analysis of efficiency measures should be conducted with these different perspectives in mind so that all opportunities for efficiency improvements are identified and the relationships among water uses within a basin are understood.

- **Offer help in the planning and financing of water use efficiency improvements** - In order to implement efficient water management practices, water users must have information about proposed measures and the ability to finance implementation. Technical and financial assistance will be essential to improve water use efficiency.

- **Remove institutional barriers to efficient water use** - If there are institutional barriers that impede more efficient use of water, these barriers should be examined to see if impediments to efficient use can be reduced while necessary purposes of the institutions are maintained.

- **Preserve local flexibility** - During the CALFED scoping period and at numerous public meetings, stakeholders stressed the desire to maintain the flexibility of implementing water use efficiency improvements at the local level. CALFED will strive to develop an approach to efficiency that provides necessary assurances of efficiency while maintaining this flexibility to tailor implementation to local conditions.

TOOLS AVAILABLE TO MEET OBJECTIVES

CALFED will develop an approach for agricultural water use efficiency that may consist of many different actions, programs, and institutional changes. Collectively referred to as tools, many of these are described below. These tools generally fall into two categories: market or incentive tools, and regulatory tools. Some of them are a combination of market and regulatory features. What is presented below is a list of potential tools. **It is not the intention that all of the tools described would be appropriate as part of the Bay-Delta solution. Several of the tools discussed could be implemented by themselves or in combination with others to form an overall approach. Others may not be appropriate for use in meeting the objectives of the CALFED process.**

Each tool description includes strengths and weaknesses, a discussion of how the tools may work in combination with others, and examples of actual use of these or similar tools.

1. *Tool:* Comprehensive Water Transfer Rules - A uniform and comprehensive set of rules for water transfers could be proposed based on the existing statutory framework. Critical items would include: 1) a consistent and uniform basis for determining what constitutes saved or conserved water and what constitutes transferable water; 2) protection of the underlying contract or water right on which the transfer is based; and 3) mitigation of third party impacts on groundwater conditions, the local economy, and the local environment. This would be accomplished by defining transferable water in one of two ways: 1) water associated with reductions in consumptive use, irrecoverable losses, or actively managed and monitored conjunctive use; or, 2) water associated with reductions in recoverable losses. Each of the two categories would be governed by a slightly different set of transfer rules and guidelines with the intention of protecting in-basin resources and third parties. Distinctions would also be made to address in-basin versus out-of-basin transfers.

Strength: Creates incentives to manage water more efficiently; no net impact to local basin hydrologic resources; streamlines transfer process and creates consistency in determination of transferable water; provides protection for groundwater resources and safeguards for groundwater users;

Weakness: Potential negative impact to local economies; could negatively impact habitat areas; will reduce the amount of commodity-producing land; could result in urbanization of lands taken out of production.

Use with other tools: This tool could work well in conjunction with other tools including a structured water transfer tax, water management planning, and price incentives for conjunctive use. Safeguards to protect third party interests would be vital to the use of this tool. Use of this tool does not preclude the use of other tools.

Examples of actual use: There are not examples within the state of one overall transfer market working under a coherent set of rules. In recent years there have been many water transfers occurring throughout the state. However, the majority are only short-term and based on a variety of existing sections of the Water Code. Some transfers had little or no effect beyond the parties involved, while others caused tremendous controversy. The main example of a transfer market is the state's Drought Water Bank. This market only dealt with short-term transfers and allowed pumping of groundwater, a highly controversial component of the program. Allowing the pumping of groundwater by surface water users may have caused negative impacts to surrounding groundwater users.

2. *Tool:* Water Rights Assurances - Under existing water rights law, water that is not used for five years is abandoned or forfeited. The law is also clear that conservation of water and transfers of water are reasonable and beneficial uses. Understandably, there are concerns among agricultural water users that water saved or transferred for other uses might be forfeited after a period of years. This is a powerful disincentive to conserve or to achieve a higher level of efficiency and it acts as a disincentive to engage in long-term transfers. To remove this barrier, specific regulatory assurances could be developed stating that saved/conserved and transferred water is not lost to the underlying water supply contract or water right. Such assurances will reaffirm California law and commit to the water rights priority system and the area of origin laws.

Strength: Removes disincentive to conservation and long-term water transfers; provides necessary assurances to agricultural water users.

Weakness: May have difficulty justifying water rights after very long-term transfers (e.g., >30 years).

Use with other tools: Combining this tool with comprehensive water transfer laws will provide the assurances necessary for a transfer market to be successful. Use of this tool will not hamper the use of other tools.

Examples of actual use:

3. *Tool:* Conditions for transfer of marketed water - Agricultural agencies wishing to buy water through transfers would be subject to conditions prior to approval of the transfer. Conditions could include requiring the receiving agency to be a signatory to the MOU, have an adopted and implemented a water management plan, or other conservation based conditions. A priority system for approval of transfers may be given to agencies who have met the conditions. Currently, transfers between agencies need to be approved by the SWRCB, the SWP, and/or the

CVP depending on the water being transferred and the facilities being used to transfer. Pre-1914 rights are not subject to approvals and typically would not be on the receiving end of transfers. Conditions might not be placed on the selling agency since approval of a transfer already requires proof of conserved or saved water.

Strength: Acts as an incentive for conservation; uses market pressure to gain compliance.

Weakness: May limit participation in markets and decrease measures implemented to increase water available for transfers.

Use with other tools:

Examples of actual use:

4. *Tool:* Structured Water Transfer Tax - One of the concerns of a water transfer market is the potential effect on local socio-economic conditions. To address this concern, a tax could be levied on all transfers to be paid to the local county or governing body to mitigate for potential socio-economic impacts. Money derived through this tax would be used to offset increases in social programs or other aspects that may be affected because of the transfer. Such a tax could also be structured to control the amount of water transferred out of any one region by creating a progressive tax (e.g., the tax rate would increase for each additional block of water transferred from the region). This would increase the cost of the water and require buyers and sellers to analyze the opportunities and impacts more closely.

Strength: Mitigates for potential local socio-economic impacts resulting from transfers; if tiered tax is used, acts a price incentive to limit quantity of water transferred from any one region.

Weakness: Creates additional accounting complications; requires close tracking of all transfers.

Use with other tools:

Examples of actual use:

5. *Tool:* State Drought Water Bank Conditions - Conditions would be placed on agencies wanting to participate in the state's Drought Water Bank (Bank). These conditions could state that the Bank will not make water available to any buyers unless they have completed water management planning according to the AB 3616 MOU or other specified standards. More stringent conditions could be included to further encourage efficiency improvements by requiring implementation of cost-effective EWMPs. Agencies that do not meet the requirements may either not be able to receive Bank water or may have to pay an additional premium for the water delivered (i.e., surcharge).

Strength: Acts as an incentive for agencies to implement efficiency improvements; not extremely difficult for agencies to comply.

Weakness: Requires more staff time to review and approve Drought Water Bank transactions.

Use with other tools: Limited access on the availability of Bank water would work well with a required water management planning process. Conditions would generally not hamper the use of other tools since desire for Bank water would be a decision made by individual districts according to their own supply/demand situation.

Example of actual use: The Drought Water Bank, as stated in the 1993 Program EIR, requires agricultural agencies to implement EWMPs, according to a schedule anticipated in the MOU, in order to be eligible for Bank water.

6. *Tool:* Water Management Planning - Legislation could be passed to require all agricultural water users, whether a CVP contractor, SWP contractor, or a water rights holder to develop a Water Management Plan. Such a plan would have to answer certain questions and consider certain conservation or efficiency improvement measures, such as those listed in the CVPIA criteria or the AB 3616 MOU. Plans could be required one time only or a process could require re-analysis on a predetermined schedule. This effort could focus on using uniform methods to analyze the benefits and costs of implementing various Efficient Water Management Practices (EWMPs). The result of the analytical process could be that water users identify ways in which they can make water available for a transfer market which they otherwise may not have determined; or that they identify ways to reduce their own water costs or improve their yields, or mitigate a local shortage condition or groundwater problem. Implementation of cost-effective measures could be a condition for receiving additional water supplies or other benefits.

Strength: Consistent methods of analysis; all districts would be involved; results in either confirmation of existing efficiency or discovery of areas for improvement; could create database of potentially transferable water supplies; could create "friendly competition" between agencies regarding effective management techniques.

Weakness: Requires additional staff and time both for agency preparing plan and agency reviewing plans.

Use with other tools: Use of this tool does not preclude the use of other tools. Contract provisions, such as CVP conservation plans, could substitute for this requirement. Use of this tool would work in conjunction with planning and financial assistance tools if non-compliance meant no access to assistance.

Examples of actual use: Urban water suppliers are required, under California Water Code, Section 10610 et seq., to develop Urban Water Management Plans every five years. These plans call for, among other items, identification of water conservation and reclamation programs and water shortage contingency plans. The intention is to prompt agencies to

analyze their water management and to determine the best management practices that would benefit their customers. The AB 3616 process has proposed a method for uniform analysis of EWMPs that has been tested by a few agricultural districts. The conservation plans required by the Bureau of CVP contractors is another example of a mandatory planning procedure. Under the CVP requirement, contractors must develop conservation plans and analyze a list of EWMPs, discussing their plans for implementation or reasons for exemption.

7. *Tool:* Technical and Planning Assistance - Increased technical or planning assistance could be made available to agricultural water purveyors or individual irrigators for measures such as developing water use efficiency programs, completing integrated resource planning, determining cost-effectiveness of conservation measures, and developing conjunctive use programs. Planning assistance may be made available at no cost to the agency or individual as an incentive to evaluate and implement efficiency improvements. Assistance could be provided directly by agencies such as DWR or USBR. Alternatively, funding could be provided through government grants or through local programs operated by Resource Conservation Districts, Cooperative Extension, commodity groups, or water districts themselves. There may be benefits for local agencies as well as water users (e.g., a water district providing assistance to individuals within the district can gain improvements in operations and maintenance aspects that save the district money). A technical program could be a function of an Agricultural Water Conservation Council, as proposed under the AB 3616 agricultural MOU.

Strength: Low- or no-cost technical assistance to agencies and individuals; assistance helps provide uniformity in methodology; theoretically adds temporary staff to an agency or individual to help complete necessary investigations/planning/implementation.

Weakness: Flexibility of choosing technical experts may be limited to whomever is providing assistance; limitations in the number of staff available for assistance could delay the timeliness of assistance.

Use with other tools: The use of this tool does not prohibit the use of other tools nor is it hampered by the use of others.

Example of actual use: Both the Bureau of Reclamation and Department of Water Resources offer technical assistance through their water conservation offices. This technical assistance is limited because of staff and budget limitations. These agencies also provide funding for outside organizations to perform technical assistance to agencies (e.g., the Irrigation and Training Research Center at Cal Poly is funded by the Bureau to assist agricultural districts in conservation measures and planning). In addition, there are many irrigation districts that internally offer their customers technical assistance with developing and implementing efficiency measures.

8. *Tool:* Water Use Diversion Fee/ Non-compliance Fee - A fee could be established that would require payment of a tax or fee by an agency per acre-foot of diversion or delivery. One form of such a fee would apply to all water purveyors. It could act as a price incentive to induce

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efficiency improvements. The higher the price paid for water, the more efficiently the water diverted will be used. A second approach would involve only charging a users fee for agencies not in compliance with particular stipulations, such as a level of EWMP implementation. This second approach could be viewed as a penalty fee for non-compliance. Funds derived from either method could be used to develop a revolving fund to help finance efficiency improvement projects, or to fund environmental restoration programs designed to reduce the impacts of water diversions.

Strength: Price-based incentive to implement conservation measures; penalty for non-compliance provides strong assurance.

Weakness: Tax on all users to promote conservation could be viewed as too regulatory and may complicate other potential user taxes for other aspects of a Bay-Delta solution; may result in lawsuits regarding authority to charge fees, etc.; users may revert to groundwater to reduce the effect of any tax.

Use with other tools: A user tax would work independently of other tools. Use of a penalty fee would work in conjunction with conditional tools such as contract provisions or water management planning requirements.

Example of actual use: The CVPIA included a tax on CVP contractors for each acre-foot diverted to fund an environmental restoration program.

9. *Tool:* Surface Water Pricing - Current pricing structures used by agricultural water districts do not differentiate between hydrologic year types. For instance, the price for an acre-foot of water is usually the same regardless of surface water supply conditions (wet year vs. dry year) with the exception of varying O&M charges added to the water price. As an alternative, districts could subsidize in wet years and surcharge in dry years the price of surface deliveries. The intended result is that the price of surface water will be made lower than the equivalent cost of groundwater in wet years and higher than the cost to pump groundwater in dry years. This should result in an incentive for farmers to take advantage of wet year supplies to recharge aquifers for use during dry years. In essence, circumstances would be created by the district such that it would make economic sense to over-irrigate or somehow capture and store groundwater during wet years and reduce surface water diversions during dry years.

Strength: Incentive to implement conjunctive use program; allows farmers more flexibility with water supplies and cropping decisions; reduces dry year surface water diversions.

Weakness: Difficult for districts to predict farmers' decisions and set water prices to achieve goals without jeopardizing operating budgets; added level of water accounting and tracking; increased need to monitor groundwater conditions; recharge may degrade groundwater conditions through transport of nutrients, pesticides, and herbicides if recharge is accomplished through over-irrigation.

Use with other tools: Use of this tool does not preclude the use of other tools. In conjunction with water transfer rules and water rights assurance, this tool would work well.

Examples of actual use:

10. *Tool:* Incentive Payments - These can be used to encourage practices that might yield environmental, water quality, or water supply benefits but are not cost-effective to the implementing district or water user. Payments would make the practices cost-effective. For instance, incentives could be offered to encourage storage and banking of surface supplies.

Strength: Incentives result in achievement of desired action.

Weakness: Requires an administrative structure to fund and manage payment programs;

Use with other tools: Use of this tool does not preclude use of other tools. This tool would work well in combination with transfer markets but would probably require water rights assurances.

Examples of actual use:

11. *Tool:* Low interest loans and other financing assistance - Low interest loans are financial incentives made available to water users to provide capital required for implementation of water use efficiency programs. Programs may be implemented by individuals for particular fields, or can be on a district or even regional basis. Loans are provided at low interest rates to ease the burden of repayment while facilitating the early implementation of water conservation and management improvements. Other forms of financial assistance include grants and direct financing (funding agency pays directly for a particular project). Low interest loans or other financial assistance could be made available through State or federal agencies or through regional cooperative groups (e.g., Resource Conservation Districts, Cooperative Extensions, commodity boards), to local water purveyors, or possibly individual water users. Conditions could be placed on the applicants to require conservation plans or other items prior to loan or grant approval.

Strength: Low interest rates and ease of availability of funds; application is relatively easy to complete; justification for funding is straightforward; promotes regional cooperation.

Weakness: If conditions are included some applicants may not apply; taxpayers pay for subsidy portion of loan.

Use with other tools: Other tools are not particularly precluded if this tool is used. However, other tools may work well with this one. Stipulations for acquiring funds could be required that would include a greater commitment to water use efficiency, such as requiring an agency to be a signatory to the MOU and have an approved water management plan. Stronger stipulations might tend to turn agencies to other funding sources or discourage agencies from implementing programs.

Example of actual use: The Water Conservation Bond Law (Proposition 82) was passed by voters in 1988 and is an example of a conservation loan program. It authorized DWR to sell $60 million of general obligation bonds for low-interest loans to local agencies for both water conservation projects and groundwater recharge. The program has been very popular among water purveyors, loaning nearly $15 million annually. Requirements to receive a loan, however, do not include the necessity for the applicant to have an EWMP implementation plan, or even be a signatory to the agricultural MOU.

12. *Tool:* Tax Credits and Rebate Programs - Tax credits would be developed by the Franchise Tax Board for installation of particular conservation equipment such as gated pipe and hand move sprinklers (for use in pre-irrigation) or for participation in cooperative projects to improve regional efficiency. Individuals or agencies could be given a credit on their taxes for the installation of equipment or upon evidence of participation in cooperative programs. Rebate programs are designed to pay individuals a sum of money after installation of the equipment. The money from rebate programs usually is from the local water agency, cooperative associations, or from grant funding. The savings in reduced water use help to offset the cost to the agency.

Strength: Rebate programs are popular, particularly when action associated with rebate is required or strongly encouraged.

Weakness: Tax credits are viewed as an annoyance by the Franchise Tax Board; tax credits are cumbersome to administer and difficult to modify once they are enacted.

Use with other tools: Use of other tools would not be precluded if tax credits or rebate programs were developed.

Example of actual use:

13. *Tool:* Bond Pooling - Bond pooling is a method of financing projects by joining several agencies together under one bond issuance. Two kinds of bond pooling are available. The first would group specific projects for a specific amount of money. The second would secure an amount of money for a specific group of agencies but would not contain specific projects. Agencies would apply for loans out of the pool similar to a revolving fund program. The benefits for agencies in a bond pool include slightly lower bond rates, better bond ratings, reduced bond issuance costs, and the ability to separate the debt from other financial aspects of the agency. Bond pools are generally available through associations but only to member agencies (e.g., ACWA's pooled financing program is only available to ACWA members).

Strength: Ability to gain lower bond rates and reduction in issuance costs (result of spreading issuance among several agencies); reduces the effort to gain capital financing for small agencies that are unfamiliar with financing; associations offering bond pooling tend to look after the best interest of their members and therefore provide a comfort level to agencies that might not be present if the agency self-finances or goes through another source.

Weakness: Process of obtaining enough applicants to receive a reasonable bond rate typically takes more than a year; discourages many agencies that need capital much earlier and do not wish to wait; availability of bond pooling is not well understood or known by some water agency managers or staff; bond pools are generally available only to member agencies of the particular association operating the pool; bond pools are only convenient for capital projects in the $1 to $5 million per project range; many large water agencies have larger capital needs and can finance on their own.

Use with other tools: Bond pooling could work independently of other tools and does not preclude the use of other tools. In combination with conditional tools, access to bond pooling could be used as an incentive.

Example of actual use: Bond pooling has not been practiced among agricultural water agencies or their respective associations.

14. *Tool:* Contract Language Revision - Certain provisions of some CVP and SWP contracts for agricultural water supply contain language that tends to be a barrier to efficient water management. Terms such as "use it or lose it" and "take or pay" are used to describe the agricultural district's interpretation of this contract language. In addition, some CVP contracts do not provide for carrying over unused water from one year to the next. This encourages the use of water during one year when it might be more efficient to defer the use of the water until the following year. Language such as this could be removed and language added to allow for protection of contract rights even when not used every year and to allow for carryover of undelivered water. Carryover water could be considered "first to spill" and would not be guaranteed available in subsequent years.

Strength: Removes barrier to efficient water use; provides districts with more management flexibility; makes use of existing reservoirs to store water.

Weakness: May reduce "losses" that returned to the system; may reduce CVP/SWP project revenues; creates more difficult reservoir management and accounting; may be difficult to modify existing contracts except during contract re-negotiations.

Use with other tools: Use of this tool does not preclude the use of other tools. Use of this tool would be complemented by creation of coherent water transfer rules and price incentives for conjunctive use. If language is only changed during contract re-negotiations, other requirements could be asked of the contractor in exchange for the modified language.

Examples of actual use: The federal Central Valley Project Improvement Act (CVPIA) contained provisions to allow the Bureau of Reclamation to modify language during CVP contract renewals to only pay for diverted quantities. Several contracts have been modified using the new language. However, districts involved in the negotiations feel that several concessions were made to gain the modified language. Additionally, under CVPIA, the Bureau has an increased ability to work with contractors on water banking programs. As for

the SWP, the Monterey Agreement (still pending the outcome of lawsuits on the Draft EIR) is intended to address some of the perceived language barriers within SWP contracts.

15. *Tool:* CVP/SWP Contract Provisions (or other condition of service) - The state and federal water projects have contracts with numerous agricultural and urban water purveyors to wholesale surface water. Under these contracts there may be provisions to encourage or require water conservation planning or programs. However, many contracts do not have provisions or the current provisions are simply not being enforced. There are at least three ways to include conservation provisions as a part of contract requirements. One method would be to simply include such provisions during contract renewals. A second would include the use of incentives, such as assurances or grant money, to allow contractors to renegotiate or agree to the addition of provisions into existing contracts. The third would be more universal and would include the use of legislative changes, such as CVPIA or the Reclamation Reform Act to include provisions across all existing and future contracts.

Strength: mandated requirement and all contracting agencies would need to comply.

Weakness: forced regulation that is not readily accepted by agencies; agencies will tend to satisfy conditions with least amount of effort and goals of conditions may not really be met; condition can affect first contractor of water (wholesaler) but authority to impose conditions on lower retail levels has not been clearly established.

Use with other tools: Contract provisions may be hampered if conditions are also placed through water rights provisions. Otherwise, contract provisions should not be adversely affected nor affect the use of incentive programs or other mechanisms.

Example of actual use: The CVPIA is an example of a legislated condition placed on water users. In the case of the CVPIA, only CVP contractors are affected. The Bureau's Reclamation Reform Act also required the completion of water conservation plans by each contracting agency. If a satisfactory plan was not completed, contract renewals were placed on hold. This policy prompted several agencies to work fast and produce conservation plans that were acceptable.

16. *Tool:* Water Right Permit Conditions - The State Water Resources Control Board (SWRCB) has the authority to grant and control water rights permits. When issuing new water rights permits, the SWRCB may place conditions on the permits to require such items as the completion of conservation plans or programs. Some water right permits with "reserved jurisdiction" clauses (started being used in 1960's), may also allow the SWRCB to initiate additional conditions on existing water rights permits using the justification of "changes in environmental conditions". However it has been very difficult to post-condition permits. Another type of condition could include variations in diversion restrictions during drought periods. For example, an agency not in compliance with necessary conservation criteria would have greater shortages during a drought period than would an agency that is in compliance.

Strength: permit conditions can result in successful conservation programs; conditions have a backing of authority to ensure compliance; can be very successful as part of all future water rights permits.

Weakness: some past permit conditions have been ignored with no enforcement action taken by the SWRCB; conditions may require increase in staffing at SWRCB to "police" conditions and to review increased compliance associated paperwork; there is a potential for increases in lawsuits brought on by water right holders; no precedence has been set where the SWRCB places additional conditions on long standing water rights, such as pre-1914; conditioning all water rights equally would be very difficult because of the extreme variation and complexity of the rights; conditioning water rights would be viewed as very intrusive by the affected water agencies; conditions may result in increased usage of groundwater and overdraft conditions.

Use with other tools: This tool would work well in conjunction with changes in the California Water Code and increased use of existing authority of the SWRCB regarding the definition of "reasonable use". Use of conditions on some water rights holders, such as the SWP and CVP may preclude or hamper use of similar contract provisions being placed on the end user. Conditions would not be affected by incentive type programs unless the condition stated that participation in incentive type programs (low interest loans) was not allowed if compliance with condition was not achieved.

Example of actual use: There are many examples of conditions being placed on recently approved water rights permits. One such example is the El Dorado Irrigation District. EID was required to develop and implement a comprehensive orchard conservation program as a condition of receiving approval on their permit application. This program is still in place and successful. In some other instances, conditions have been ignored or complied with only at a rudimentary level. During extreme drought conditions, the SWRCB has used its "reserved jurisdictional" clause to limit the diversions of some water rights holders, but this has never been initiated on a long-term basis.

As shown above, there are numerous tools available to help meet the objectives of an agricultural water use efficiency strategy. The matrix in Table 1 is included to allow for comparison of the various tools to see how they may meet the stated objectives.

Table 1 - Comparison of Tools to Objectives

Objective	Available Tools *(see key below)* 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1 Ensure a strong water use component in the Bay-Delta solution	✔					✔		✔	✷	✷					✔	✔
2 Build on the progress and achievements of the agricultural MOU (AB 3616)	✷					✔									✷	✷
3 Provide adequate assurance that ag water supplies will be used efficiently			✔		✔	✔		✷							✔	✔
4 Emphasize market tools over regulatory tools	✔			✔			✔		✔	✔	✔	✔	✔			
5 Improve water management to achieve multiple benefits	✷			✷					✔	✔						
6 Encourage analysis of water use efficiency at all levels, from field to valley-wide	✷		✔	✔	✔	✔										
7 Offer help in the planning and financing of water use efficiency improvements						✷	✔	✔	✷	✔	✔	✔	✔			
8 Remove institutional barriers to efficient water use	✔	✔												✔		
9 Preserve local flexibility	✔	✷		✷		✔	✔	✷	✷	✔	✔	✷	✷	✷		

✔ = tool directly meets objective

✷ = objective is an indirect result of tool

Available Tools

1 Comprehensive water transfer rules
2 Water rights assurances
3 Conditions for transfer of marketed water
4 Structured water transfer tax
5 State Drought Water Bank conditions
6 Water management planning
7 Technical and planning assistance
8 Water user diversion fee/ non-compliance fee
9 Surface water pricing
10 Incentive payments
11 Low interest loans and other financing assistance
12 Tax credits and rebate programs
13 Bond pooling
14 Contract language revision
15 CVP/SWP contract provisions
16 Water rights permit conditions